ORDER NO. DAD84050083C8

Service Manual

Turntable System

SL-D310/(K)

[E], [EK], [XL], [EG], [EB],
[EH], [EF], [Ei], [EC], [XA], [XM]

Areas

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [EC] is available in Czechoslovakia.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XM] is available in Central South America.

T4P is the standard for plug-in-connector type.
Products carrying this mark are interchangeable and adaptable among each other.

***The color of this model include service and black.**
***The black type model is provided with (K) in the Service Manual.**

English

Specifications

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

■ General

Power supply:	~220 V, 50 Hz
Power consumption:	4 W
Dimensions (W×H×D):	43×10×37.5 cm (16-15/16"×3-15/16"×14-3/4") { Maximum height when dust cover is open. 43×37×41 cm (16-15/16"×14-9/16"×16-1/8") }
Weight:	4.5 kg (9.9 lb.)

■ Turntable section

Type:	Direct drive Automatic turntable Auto start Auto return Auto stop Manual play
Drive method:	Direct drive
Motor:	Brushless DC motor
Turntable platter:	Aluminum die-cast Diameter 31.2 cm
Turntable speeds:	33-1/3 rpm and 45 rpm
Wow and flutter:	0.012% WRMS* 0.025% WRMS (JIS C5521) ±0.035% peak (IEC 98A Weighted)

*This rating refers to turntable assembly alone, excluding effects of record, cartridge or tonearm, but including platter. Measured by obtaining signal from built-in frequency generator of motor assembly.

Rumble: −56 dB (IEC 98A Unweighted)
−78 dB (IEC 98A Weighted)

■ Tonearm section

Type:	Statically-balanced straight tonearm Plug-in connector cartridge system
Effective length:	230 mm (9-1/16")
Overhang:	15 mm (19/32")
Tracking error angle:	Within 2°32′ at the outer groove of 30 cm (12") record Within 0°32′ at the inner groove of 30 cm (12") record
Effective mass:	13.5 g (including cartridge)
Applicable cartridge weight:	6 g

SL-D310

■ Cartridge section

Type:	Moving magnet stereo cartridge	**Channel separation:**	22 dB at 1 kHz
Magnetic circuit:	All laminated core	**Channel balance:**	Within 2 dB at 1 kHz
Frequency response:	10 Hz~35 kHz 20 Hz~10 kHz ±1 dB	**Recommended load impedance:**	47 kΩ~100 kΩ
Output voltage:	2.5 mV at 1 kHz 5 cm/s. zero to peak lateral velocity (7 mV at 1 kHz, 10 cm/s. zero to peak 45° velocity [DIN 45 500])	**Compliance (dynamic):**	12×10⁻⁶ cm/dyne at 100 Hz
		Stylus pressure range:	1.25±0.25 g (12.5±2.5 mN)
		Weight:	6 g (cartridge only)
		Replacement stylus:	EPS-27CS

- The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.
  - ★ 220V (50/60 Hz) for Continental Europe.
  - ★ 240V (50/60 Hz) for United Kongdom and Australia.
  - ★ 110V-120V/220V-240V (50/60 Hz) for other areas.
  - ★ [XA] and [XM] areas are provided with voltage selector.

Deutsh

TECHNISCHE DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind ungefähre Werte.

■ Allgemeine Daten

Stromversorgung:	~220 V, 50 Hz
Leistungsaufnahme:	4 W
Abmessungen (B×H×T):	43 × 10 × 37,5 cm { Maximale Höhe bei geöffnetem Oberteil (Staubabdeckung) 43 × 37 × 41 cm }
Gewicht:	4.5 kg

■ Plattenspieler

Typ:	Direktantrieb Automatischer Plattenspieler Startautomatik Rückführautomatik Stopautomatik Manuelles Abspiel Manueller Betrieb
Antrieb:	Direktantrieb
Motor:	Kollektorloser Gleichstrommotor
Plattenteller:	Aluminium-Spritzguß Durchmesser 31,2 cm
Plattenteller-Drehzahlen:	33-1/3 und 45 U/min
Gleichlaufschwankungen:	0,012% WRMS* 0,025% WRMS (JIS C5521) ±0,035% Spitze (IEC 98A bewertet)

*Diese Nennleistung bezieht sich auf den Laufwerkteil allein, ausschließlich Einflüsse von Schallplatte, Tonabnehmer oder Tonarm, aber einschließlich Plattenteller. Gemessen anhand von Signalen vom eingebauten Frequenzgenerator des Motorteils.

Rumpeln: −56 dB(IEC 98A unbewertet)
−78 dB(IEC 98A bewertet)

■ Tonarm

Typ:	Statisch balancierter, gerader Tonarm Tonabnehmersystem vom Einsteck-Typ
Effektive Länge:	230 mm
Überhang:	15 mm
Spurfehlwinkel:	2°32′ bei der Einlaufrille einer 30 cm-Platte 0°32′ bei der Auslaufrille einer 30 cm-Platte
Effektive Masse:	13,5 g (einschließlich Tonabnehmer)
Zulässiges Tonabnehmergewicht:	6 g

■ Tonabnehmer

Typ:	Beweglicher Magnet-Stereo-Tonabnehmer
Magnetkreis:	Ganzlamellenkern
Frequenzgang:	10 Hz bis 35 kHz 20 Hz bis 10 kHz ±1 dB
Ausgangsspannung:	2,5 mV bei 1 kHz 5 cm/s. Null-zu-Spitze, lateral [7 mV bei 1 kHz,10 cm/s. Null-zu-Spitze, 45° (DIN 45 500)]
Kanaltrennung:	22 dB bei 1 kHz
Kanalabweichung:	Innerhalb 2 dB bei 1 kHz
Empfohlene Endimpedanz:	47 kΩ~100 kΩ
Nachgiebigkeit (dynamisch):	12 × 10 ⁶cm/dyn bei 100 Hz
Auflagekraft-Einstellbereich:	1,25 ±0,25 g (12,5 ±2,5 mN)
Gewicht:	6 g (nur Tonabnehmer)
Ersatznadel:	EPS-27CS

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SL-D310

Français

CARACTERISTIQUES

Les spécifications sont susceptibles d'être modifiées sans préavis.
Le poids et les dimensions sonnés sont approximatifs.

■ Généralités

Alimentation: ~220 V, 50 Hz
Consommation: 4 W
Dimensions: (L×H×P) 43×10×37,5 cm
Hauteur maximum lorsque le couvercle protège-poussière est ouvert.
43 × 37 × 41 cm
Poids: 4.5 kg

■ Platine de lecture

Type: Entraînement direct
Platine automatique
Démarrage automatique
Retour automatique
Arrêt automatique
Audition à commande manuelle
Système d'entraînement: Entraînement direct
Moteur: Moteur à C.C. sans balai
Plateau de lecture: En aluminium moulé sous pression
Diamètre 31,2 cm
Vitesses de rotation: 33-1/3 et 45 t/p.m
Pleurage et scintillement: 0,012% de valeur efficace*
0,025% de valeur efficace (JIC C5521)
±0,035% de crête (IEC 98A Pondéré)

*Ce régime nominal se rapporte à l'ensemble du tourne-disque seul, excluant les effets du disque, de la cellule pick-up ou du bras de lecture, mais comprenant le plateau. Mesuré par l'obtention d'un signal provenant du générateur de fréquences incorporé de l'ensemble du moteur.

Ronflement: – 56 dB (IEC 98A Non pondéré)
– 78 dB (IEC 98A Pondéré)

■ Bras de lecture

Type: Bras de lecture rectiligne statiquement équilibré.
Système de cellule de lecture à connecteur enfichable.
Longueur effective: 230 mm
Porte-à-faux: 15 mm
Angle d'erreur de piste: En deçà de 2°32' au sillon extérieur d'un disque de 30 cm
En deçà de 0°32' au sillon intérieur d'un disque de 30 cm
Masse réelle: 13,5 g (y compris la cellule pick-up)
Poids des cellules pick-up utilisables: 6 g

■ Cellule pick-up

Type: Cellule pick-up stéréo à aimant mobile
Circuit magnétique: Noyau entièrement feuilleté
Réponse en fréquence: 10 Hz à 35 kHz
20 Hz à 10 kHz ±1 dB
Tension de sortie: 2,5 mV à 1kHz; 5 cm/s., zéro à vitesse latérale de crête (7 mV à 1 kHz, 10 cm/s., zéro à vitesse 45° de crête [DIN 45 500])
Séparation des canaux: 22 dB à 1kHz
Equilibrage des canaux: En deçà de 2 dB à 1 kHz
Impédance de charge recommandée: 47 kΩ~100 kΩ
Elasticité (dynamique): 12×10⁻⁶ cm/dyne à 100 Hz
Plage de la force verticale d'appui: 1,25±0,25 g (12,5±2,5 mN)
Poids: 6 g (cellule seule)
Pointe de lecture de remplacement: EPS-27CS

Español

ESPECIFICACIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
El peso y las dimensiones indicados son apromimados.

■ En general

Alimentación de corriente: C.A. de ~220 V, 50 Hz
Consumo de corriente: 4 W
Dimensiones: 43 x 10 x 37,5 cm
(Ancho x Alto x Prof.) (Altura máxima cuando la parte de arriba (tapa contra el polvo) está abierta. 43 x 37 x 41 cm
Peso: 4,4 kg

■ Sección del plato giratorio

Tipo: Accionamiento directo
Plato giratorio automático
Arranque automático
Retorno automático
Parada automática
Ejecución manual
Método de accionamiento: Accionamiento directo
Motor: Motor de corriente continua sin escobillas
Método de control directo: Control con sincronización de Pase por cuarzo
Platillo del plato giratorio: Aluminio fundido
Diámetro 31,2 cm
Velocidades del plato giratorio: 33-1/3 y 45 rpm
Ululaciones y trémolo: 0,012% WRMS*
0,025% WRMS (JIS C5521)
± 0.035% cresta
(IEC 98A Ponderado)

* Estas caracteristicas se refieren únicamente al conjunto del plato giratorio, con exclusión de los efectos porvenientes del disco, cartucho o del brazo sonoro, incluyendo, empero, el platillo. La medida fue tomada por medio de la señal obtenida del generador de frecuencia incorporado del conjunto del motor.

Ruido de rodadura: –56 dB (IEC 98 No Ponderado)
–78 dB (IEC 98A Ponderado)

■ Seccion del brazo sonoro

Tipo: Brazo sonoro recto equilibrado estáticamente
Sistema de cartucho con conector enchufable
Longitud efectiva: 230 mm
Proyección: 15 mm
Angulo de error de seguimiento: Inferior a 2°32' en el surco exterior de un disco de 30 cm
Inferior a 0°32' en el surco interior de un disco de 30 cm
Masa efectiva: 13,5 g (incluyendo el cartucho)
Radio de ajuste de la presión de la aguja: 1,25 ± 0,25 g
Radio de peso de cartucho utilizable: 6 g

■ Sección de cartucho

Tipo: Cartucho estereofónico de imán móvil
Circuito magnético: Núcleo totalemente laminado
Respuesta de frecuencia: 10 Hz a 35 kHz
20 Hz a 10 kHz ± 1 dB
Voltaje de salida: 2,5 mV a 1 kHz
Con velocidad lateral de cero a cresta de 5 cm/s.
[7 mV a 1 kHz Velocidad de 45° de cero a cresta de 10 cm/s. (DIN 45 500)]
Separachón de canales: 22 dB a 1 kHz
Equilibrio de canales: Sin exceder 2 dB a 1 kHz
Impedancia de carga recomendada: 47 kΩ a 100 kΩ
Elasticidad (dinámica): 12 x 10⁻⁶ cm/dina a 100 Hz
Radio de presión de la aguja: 1,25 ± 0,25 g (12,5 ± 2,5 mN)
Peso: 6 g (cartucho sólo)
Aguja de racambio: EPS-27CS

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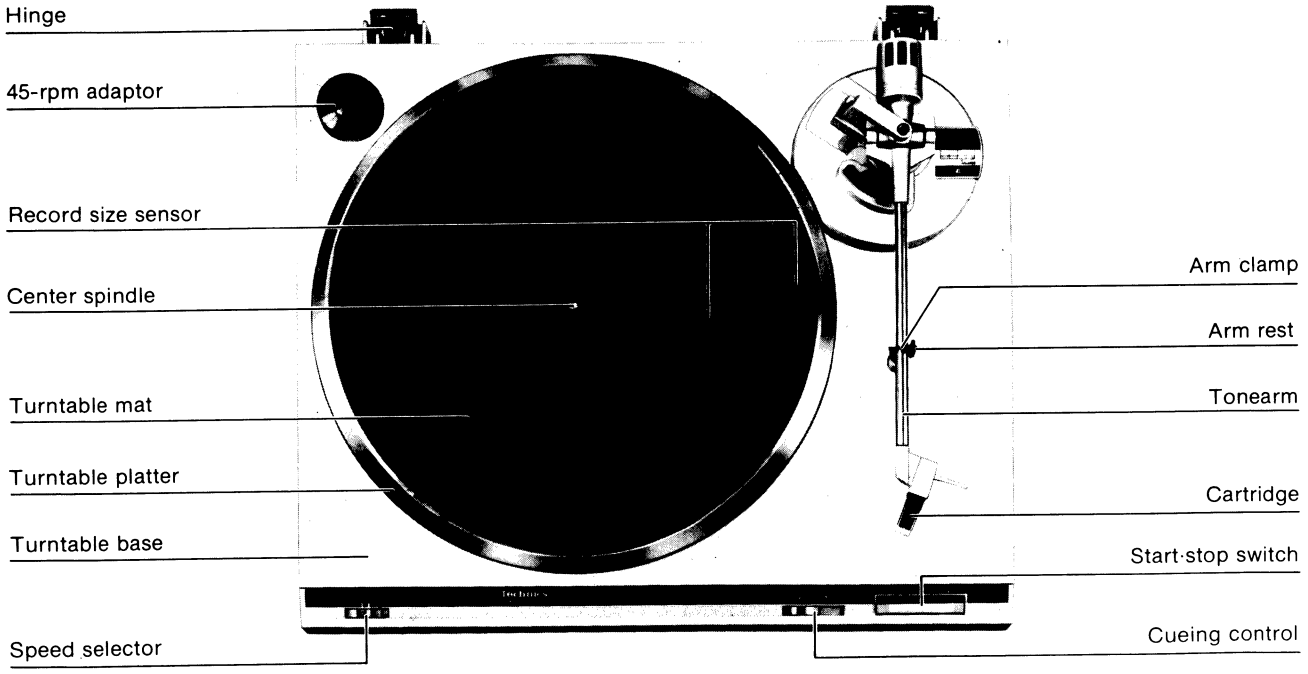
■ LOCATION OF CONTROLS



■ DISASSEMBLY INSTRUCTIONS

• How to remove the cartridge

1. Open the dust cover.
2. Clamp the tonearm to the arm rest.
3. Remove the cartridge setscrew **(Fig. 1 : ❶)**, and then pull out the cartridge in the direction of the arrow.

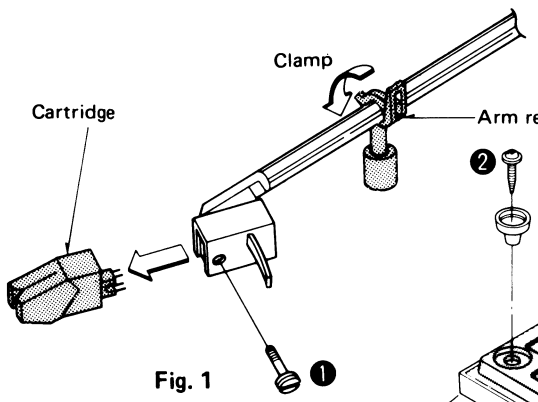


Fig. 1

• How to remove the bottom board

1. Clamp the tonearm to the arm rest.
2. Remove the turntable platter, and close the dust cover.
3. Turn over the unit on a soft cloth taking care not to damage the cabinet and dust cover.
4. Remove the 5 setscrews **(Fig. 2 : ❷ ~ ❻)** of the bottom board.

   Please note that the front and rear insulators are different from each other.

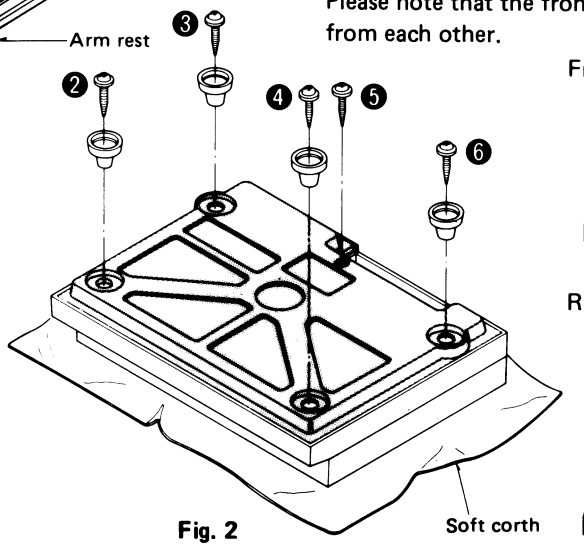
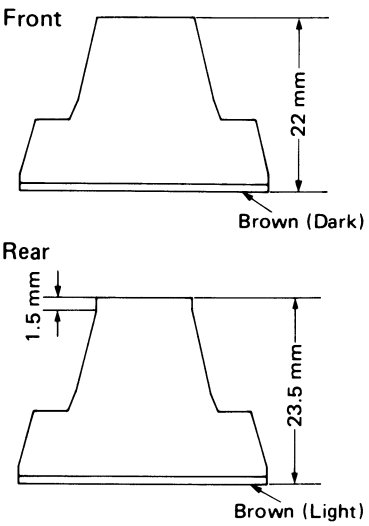


Fig. 2



• How to remove the automatic mechanism plate

1. Move the cueing control knob to "**cueing down**" position.
2. Remove the bottom board. **(Refer to "How to remove the bottom board.")**
3. Remove the 7 setscrews **(Fig. 3 : ❼ ~ ⓭)** of the automatic mechanism plate.
4. Remove the stop rod, and lift the automatic mechanism plate. **(Fig. 3)**

* When fitting the automatic mechanism plate, check the following points.

(1) Turn the main gear until it comes to the no gear part.

(2) Shift the cueing lever plate in the direction of the arrow. **(Fig. 3)**

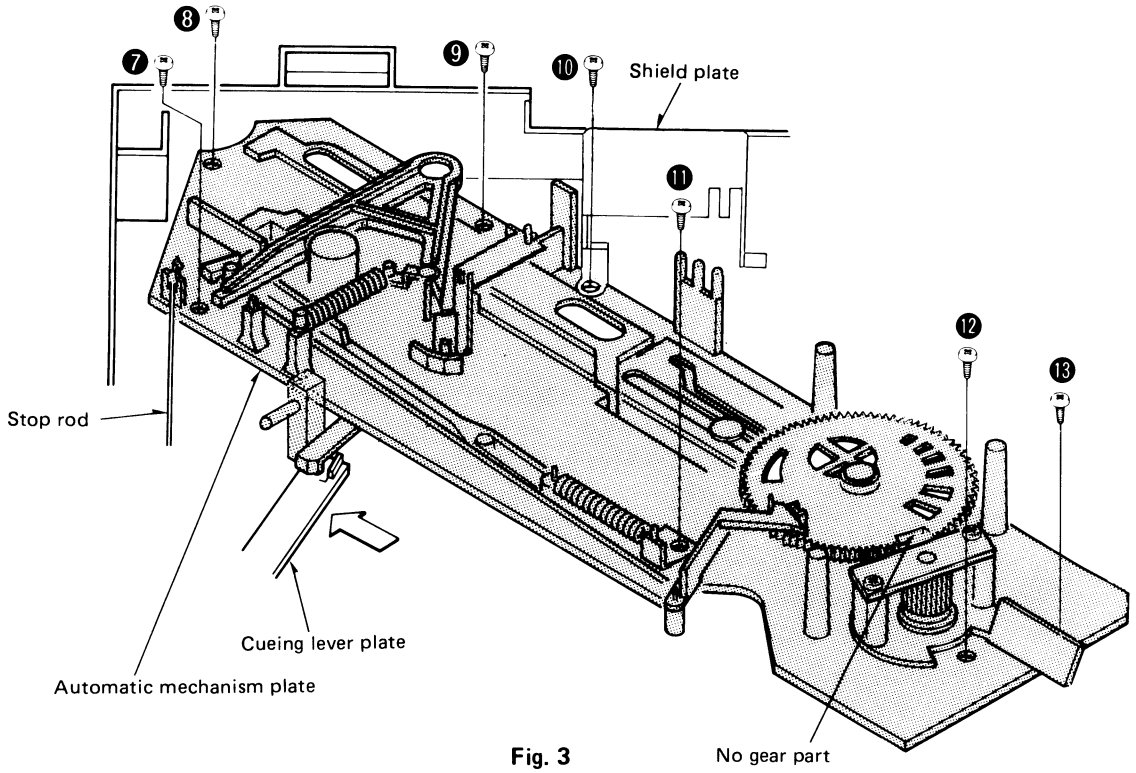


Fig. 3

• How to remove the stator frame

1. Remove the automatic mechansim plate. **(Refer to "How to remove the automatic mechanism plate.")**
2. Remove the 4 setscrews **(Fig. 4 : ⑭ ~ ⑰)** of the stator frame.
3. Remove the stator frame from the 2 claws in the direction of the arrow. **(Fig. 4)**

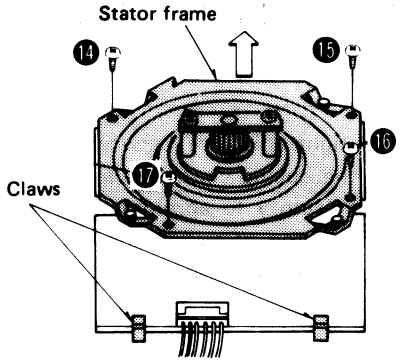


Fig. 4

• How to remove the PU fixing plate

1. Remove the automatic mechanism plate. **(Refer to "How to remove the automatic mechanism plate.")**
3. Remove the PU fixing plate setscrew **(Fig. 5 : ⑱).** Then the PU fixing plate can be removed.

• How to remove the tonearm

1. Remove the PU fixing plate. **(Refer to "How to remove the PU fixing plate.")**
2. Remove the shield plate. **(Fig. 5)**
3. Unsolder the 5 lead wires of the phono output terminal. **(Fig. 5)**
4. Remove the tonearm setscrews **(Fig. 5 : ⑲ , ⑳).** Then the tonearm can be removed.

• How to remove the lift base and arm lift

1. Remove the tonearm. **(Refer to "How to remove the tonearm".)**
2. Remove the 2 setscrews **(Fig. 6 : ㉑ , ㉒)** of the lift base. Then the lift base can be removed.
3. Remove the screw **(Fig. 6 : ㉓)** of the arm lift. Then the arm lift can be removed.

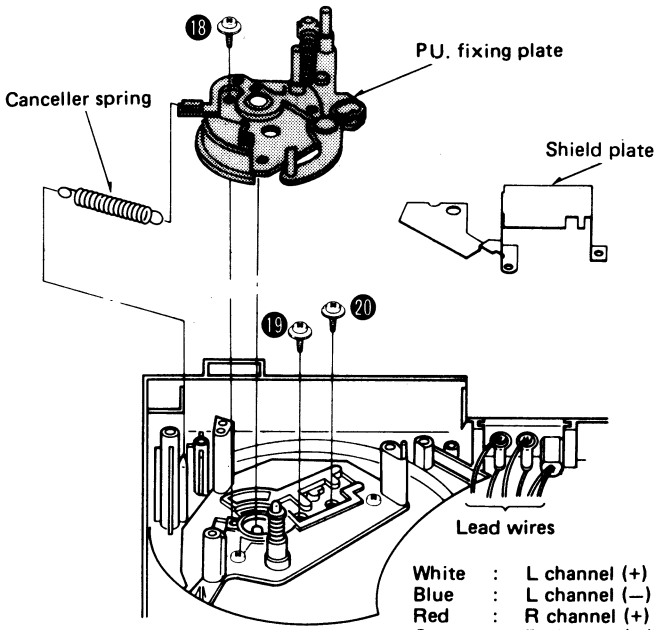


Fig. 5

• How to remove the Hall element

1. Remove the turntable platter.
2. Remove the terminal solder by use of solder sucker.
3. Hold the Hall element with a tweezers and remove it while touching the soldering iron to the terminal. **(Fig. 7)**

Note: Fit the Hall element with the part No, print up. The reverse in terminal position is allowable provided that the printed side is up.

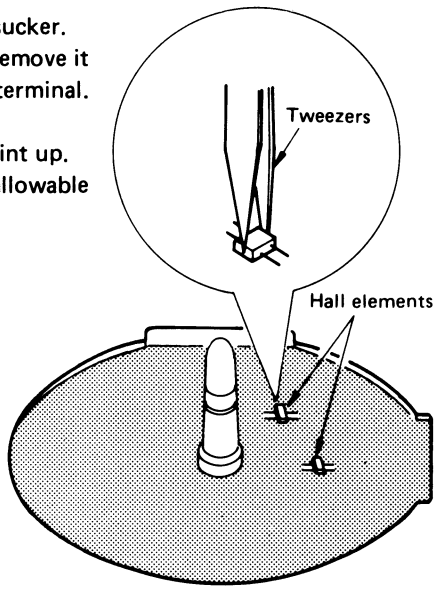


Fig. 7

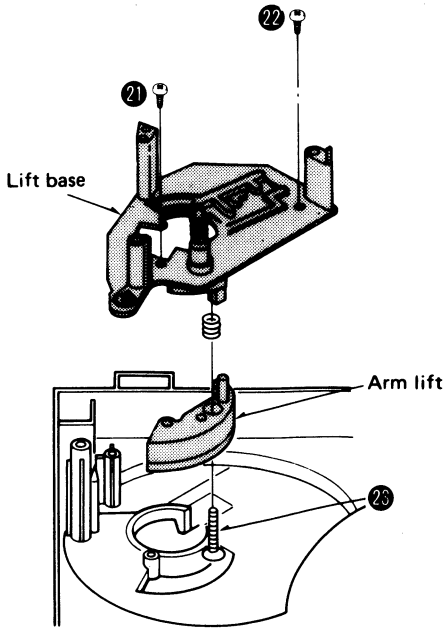


Fig. 6

■ MEASUREMENTS AND ADJUSTMENT English

1. Arm-lift height

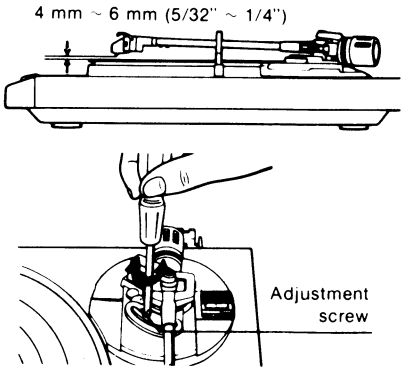
The arm-lift height (distance between the stylus tip and the record surface when the cueing control is at the " ▼ " position) has been adjusted at the factory to aproximately 4 to 6 mm (5/32" ~ 1/4"). If the clearance is too narrow or too wide, turn the adjustment screw clockwise or counterclockwise.

Clockwise rotation

– distance between the record and stylus tip is decreased.

Counterclockwise rotation

– distance between the record and stylus tip is increased.



2. Adjustment of automatic start position

If the stylus does not land in the lead-in groove, adjust as follows.

1. Clamp the tonearm to the arm rest.
2. Remove the rubber cap.
3. Turn the screw with a screwdriver, clockwise or counterclockwise as necessary.

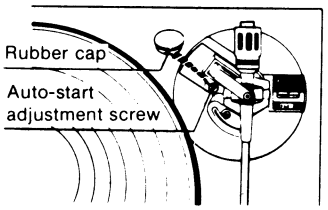
If the stylus tip sets down too far in the recorded groove.

–turn counterclockwise.

If the stylus tip sets down outside of the record.

–turn clockwise.

Adjust so the stylus tip lands 1 ~ 2 mm in from the edge of the record.



3. Automatic return position

(Remove the rubber cap.)

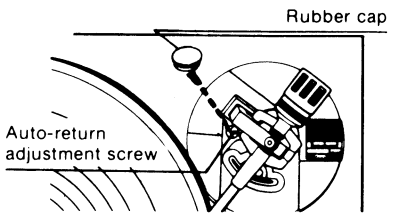
1. Put the stylus protector on the cartridge.
2. Move the tonearm toward the center of the record.
   The auto-return adjustment screw will appear.

If the tonearm tends to return to the arm reset before the play has finished.

– turn counterclockwise.

If the tonearm fails to return after the final groove.

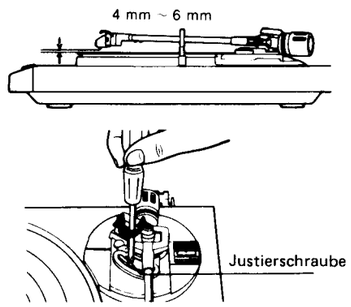
– turn clockwise.



■ MESSUNGEN UND JUSTIERUNGEN — Deutsch

1. Justierung der Tonamlifthöhe

Die Tonarmilifthöhe, d.h. der Abstand zwischen Nadelspitze und Schallplattenoberfläche bei Liftsteuerungs-Position " ▼ ", wurde werkseitig auf ca. 4 ~ 6 mm eingstellt.
Falls der Abstand zu groß oder zu klein ist (z.B. wegen unterschiedlicher Tonabnehmergröße), drehen Sie die Justierschraube im Uhrzeigersinn oder entgegen dem Uhrzeigersinn.
Drehung im Uhrzeigersinn
– Der Abstand zwischen der Platte und der Nadelspitze wird kleiner.
Drehung entgegen dem Uhrzeigersinn
– Der Abstand zwischen der Platte und der Nadelspitze wird größer.

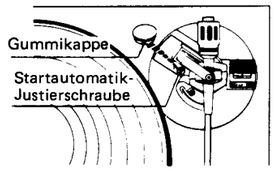


2. Justierung des Aufsetzpunktes der Automatik

Wenn der Tonarm in der Nähe der Plattenmitte ist, so ist die Auto-Rückkehr-Justierschraube sichtbar.

Wenn die Abtastnadel nicht in der Einlaufrille aufsetzt, justieren Sie wie folgt.
1. Befestigen Sie den Tonarm mit der Arretierklammer auf der Tonarm-ablage.
2. Nehmen Sie die Gummikappe von der Auto-Start-Positions-Justierschraube ab.
3. Drehen Sie die Justierschraube im Uhrzeigersinn oder entgegen dem Uhrzeigersinn, wie erforderlich.

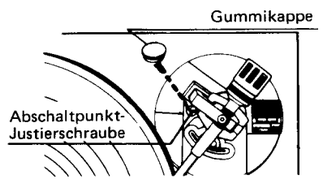
Falls der Aufsetzpunkt im Wiedergabeteil der Schallplatte liegt.
– Entgegen dem Uhrzeigersinn drehen.
Falls der Aufsetzpunkt außerhalb der Platte liegt.
– Im Uhrzeigersinn drehen.
Justieren Sie so, daß die Nadelspitze 1 – 2 mm vom Rand entfent auf der Platte aufsetzt.



3. Justierund des Abschaltpunktes der Automatik

(Die Gummikappe abnehmen)
1. Setzen Sie den Nadelschutz auf den Tonabnehmer auf.
2. Führen Sie den Tonarm gegen die Plattenmitte.
   Die Justierschraube für den Abschaltpunkt der Automatik wird dann sichtbar.

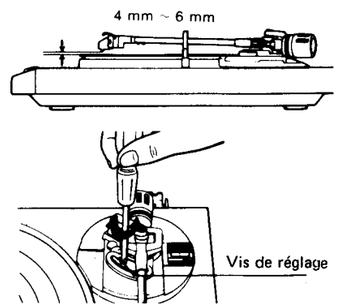
Falls der Tonarm zu früh zurückkehrt.
– Entgegen dem Uhrzeigersinn drehen.
Falls der Tonarm nach Erreichen der Auslaufrille nicht zurückkehrt.
– Im Uhrzeigersinn drehen.



■ MESURAGES ET RÉGLAGES — Français

1. Mise au point de la hauteur de l'élévateur du bras

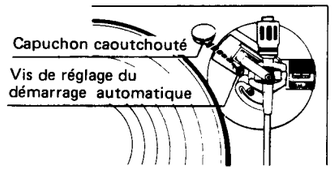
La hauteur de l'élévateur du bras (distance entre l'extrémité de la pointe de lecture et la surface du disque, lorsque la commande de pose et de relevage est à la position " ▼ ") à été réglée en usine sur approximativement 4 à 6 mm.
Si l'écartement est trop étroit ou trop large, tourner la vis de réglage dans le sens des aiguilles d'une montre ou dans le sens contraire.
Rotation dans le sens des aiguilles d'une montre.
– La distance entre la surface du disque et l'extrémité de la pointe de lecture diminue.
Rotation dans le sens contraire des aiguilles d'une montre.
– La distance entre la surface du disque et l'extrémité de la pointe de lecture augmente.



2. Mise au point de la position de démarrage automatique

Si la pointe de lecture ne repose pas dans le sillon d'entrée, ajuster de la manière suivante.
1. Bloquer le bras de lecture sur le support du bras.
2. Retirer le capuchon en caoutchouc.
3. Avec un tournevis, tourner la vis de réglage dans le sens des aiguilles d'une montre ou dans le sens inverse selon la nécessité.

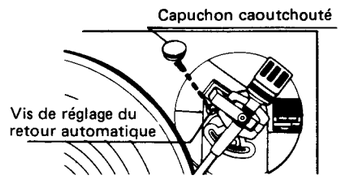
Si la tête de la pointe de lecture se dépose trop loin du sillon enregistré,
– tourner dans le sens contraire des aiguilles d'ue montre.
Si la tête de la pointe de lecture se dépose en dehors du disque,
– tourner dans le sens des aiguilles d'une montre.
Ajuster de façon à ce que l'extrémité de la pointe de lecture atterrisse à 1 – 2 mm à partir du bord du disque.



3. Mise au point de la position de retour automatique

(Retirer le tapis du plateau de lecture.)
1. Placer le capot protecteur de la pointe de lecture sur la cellule pick-up.
2. Déplacer le bras de lecture vers le centre du disque.
   Alors, la vis de réglage du retour automatique apparaîtra.

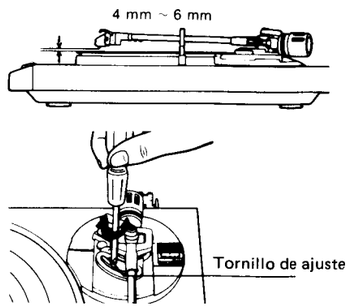
Si le bras de lecture tend à revenir vers le support du bras avant que l'audition ne soit terminée.
– tourner dans le sens contraire des aiguilles d'une montre.
Si le bras de lecture ne peut revenir en arrière après le dernier sillon.
– tourner dans le sens des aiguilles d'une montre.



■ MEDICIONES Y AJUSTE — Español

1. Ajuste de la altura de èlevación del brazo

La altura de elevación del brazo (o sea, la distancia entre la punta de la aguja y la superficie del disco cuando el control de colocación esté en la posición " ▼ ") has sido regulada en la fábrica aproximadamente entre 4 y 6 mm.
En caso que la distancia fuese demasiado abundante o demasiado escasa, girar el tornillo de ajuste hacia la derecha o hacia la izquierda.
Rotación hacia la derecha
— reduce la distancia entre el disco y la punta de la aguja.
Rotación hacia la izquierda
— aumenta la distancia entre el disco y la punta de la aguja.



2. Ajuste de la posición para el arranaue automático

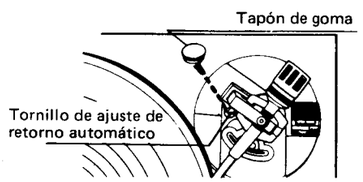
En caso que la aguja no se depositara en el surco de comienzo, regular de la manera que sigue.
1. Sujetar el brazo sonoro al apoyo del mismo con la grapa.
2. Quitar la tapita de goma.
3. Girar el tornillito de ajuste hacia la derecha o hacia la izquierda usando un destornillador, según sea necesario.

En caso que la punta de la aguja se deposita muy dentro del surco grabado:
— Girar hacia la izquierda.
En caso que la punta de la aguja se deposita fuera del disco:
— Girar hacia la derecha.
Regular de manera tel que la punta de la aguja se deposite a uno o dos milímetros del borde del disco.

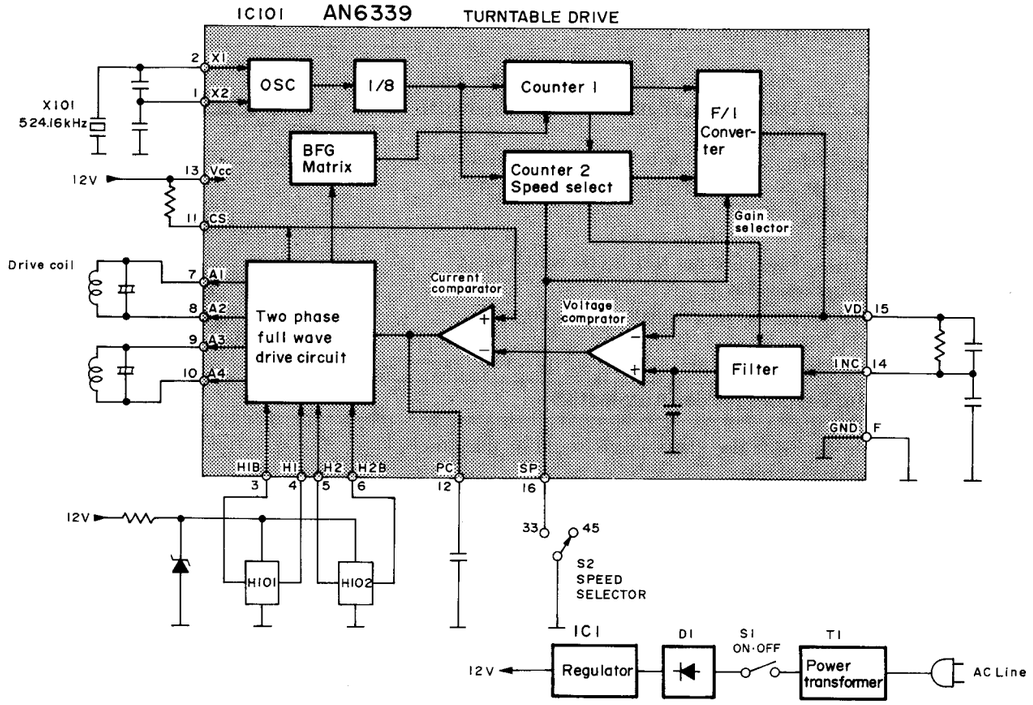
3. Ajuste de la posición para retorno automatico

(Quitar la almohadilla del plato giratorio.)
1. Colocar la protección de la aguja en el cartucho.
2. Mover el brazo sonoro hacia el centro del disco.
   Con ello, aparecerá el tonillo de ajuste del retorno automático.

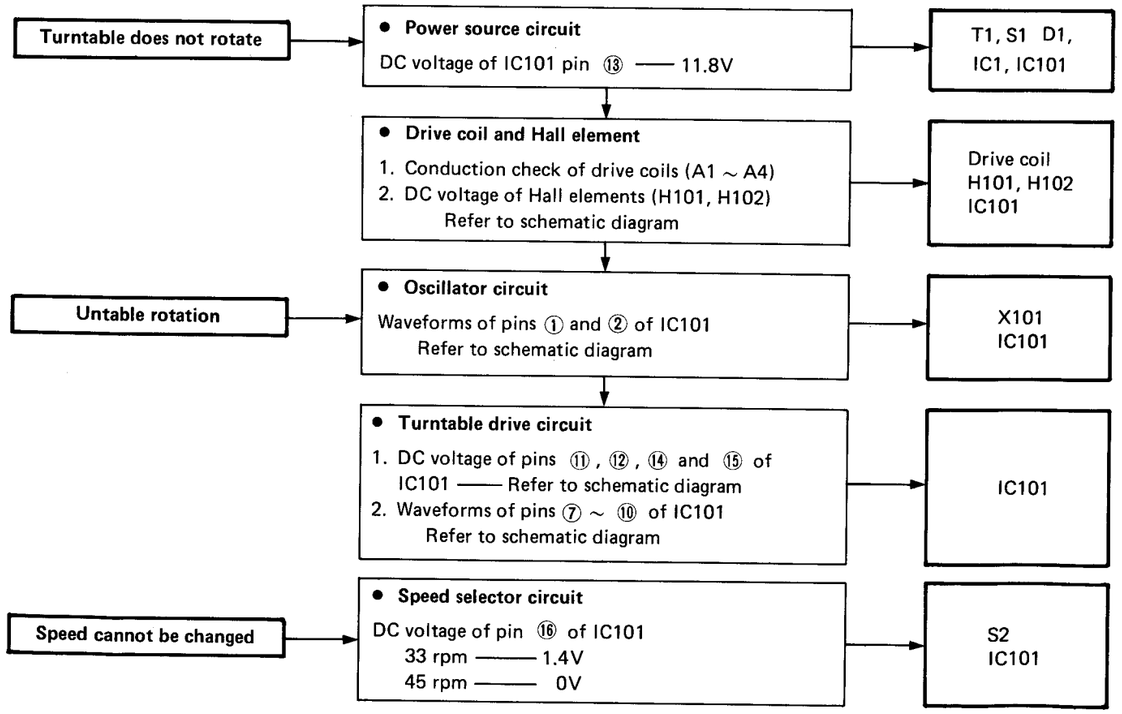
Cuando el brazo sonoro tienda a volver a su apoyo antes de terminar la ejecución.
— Girar hacia la izquierda.
En caso que el brazo sonoro no vuelva después de haber tocado el último surco del disco.
— Girar hacia la derecha.



■ BLOCK DIAGRAM



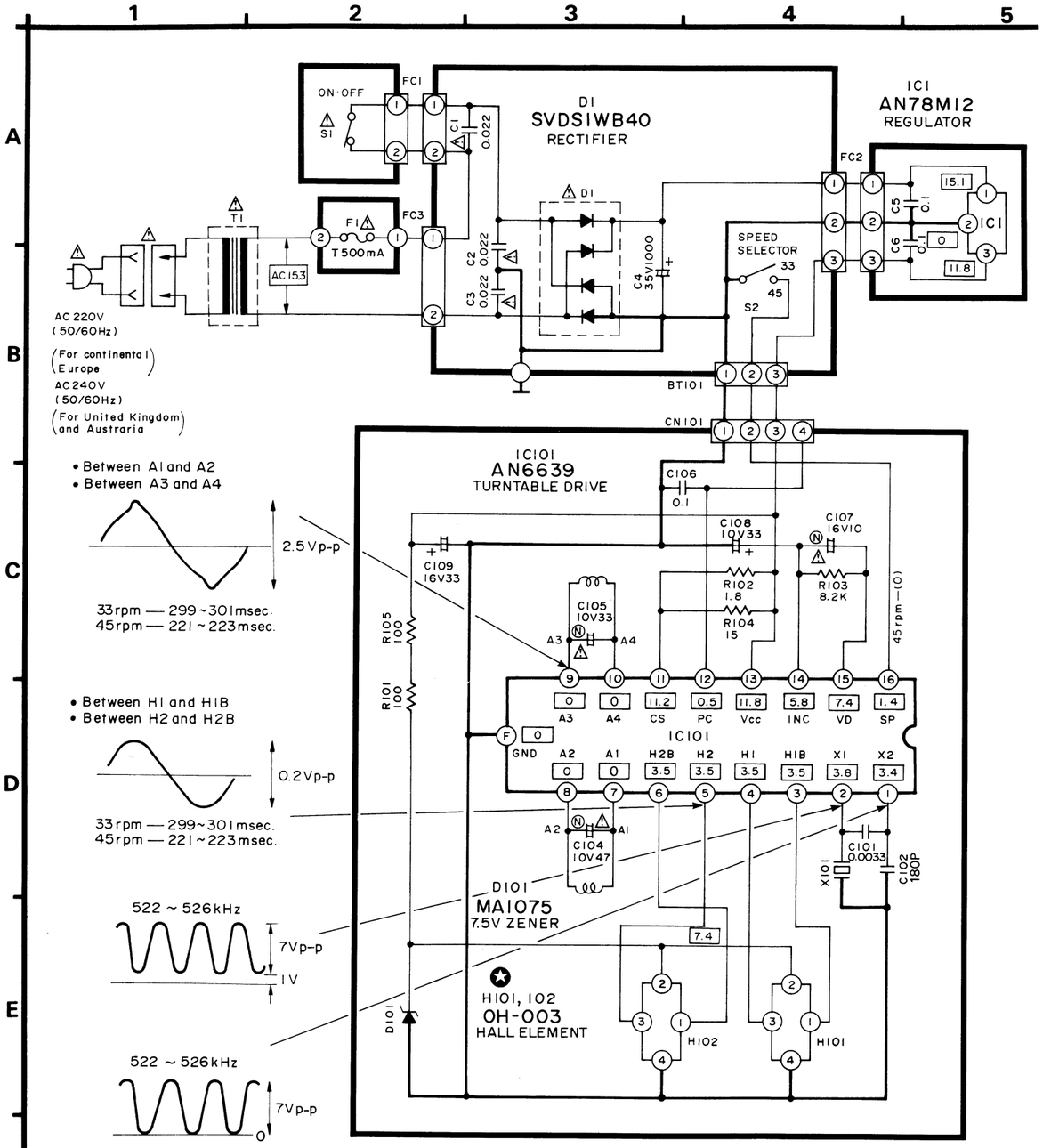
■ TROUBLE SHOOTING


Turntable does not rotate
• Power source circuit
DC voltage of IC101 pin ⑱ —— 11.8V
T1, S1 D1, IC1, IC101
• Drive coil and Hall element
1. Conduction check of drive coils (A1 ~ A4)
2. DC voltage of Hall elements (H101, H102)
Refer to schematic diagram
Drive coil H101, H102 IC101
Untable rotation
• Oscillator circuit
Waveforms of pins ① and ② of IC101
Refer to schematic diagram
X101 IC101
• Turntable drive circuit
1. DC voltage of pins ⑪, ⑫, ⑭ and ⑮ of IC101 —— Refer to schematic diagram
2. Waveforms of pins ⑦ ~ ⑩ of IC101
Refer to schematic diagram
IC101
Speed cannot be changed
• Speed selector circuit
DC voltage of pin ⑯ of IC101
33 rpm —— 1.4V
45 rpm —— 0V
S2 IC101

■ SCHEMATIC DIAGRAM

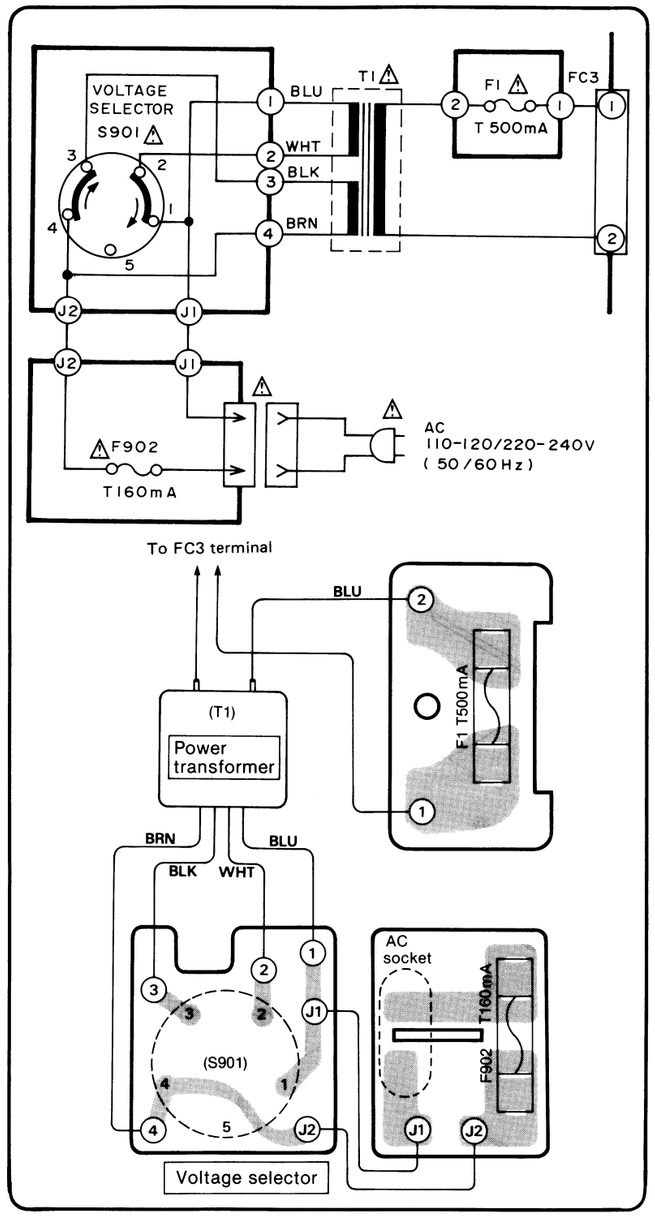
(This schematic diagram may be modified at any time with development of new technology.)

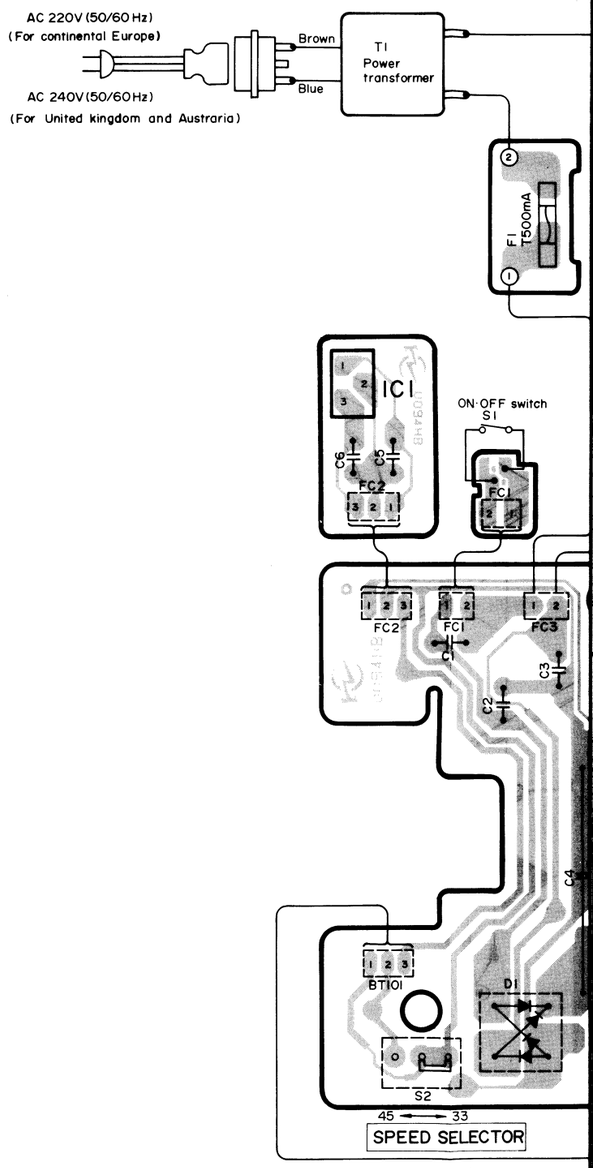
Notes: 1. **S1** : On/off (power) switch in "**on**" position.
2. **S2** : Speed selector switch in "**33 rpm**" position.
3. **S901** : Voltage selector switch in "**110-120V**" position.
4. The voltage value, and waveforms are the reference voltage values of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis when the unit is in play.
5. ——— +B voltage lines.
6. Important safety notice:
Components identifier by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.



■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

- **Power source circuit**
  For [XA] and [XM] areas

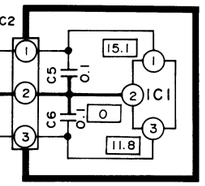


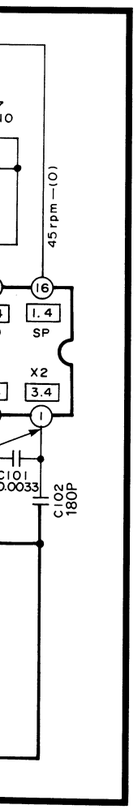


ave special character-
placing any of these
pecified parts.

5

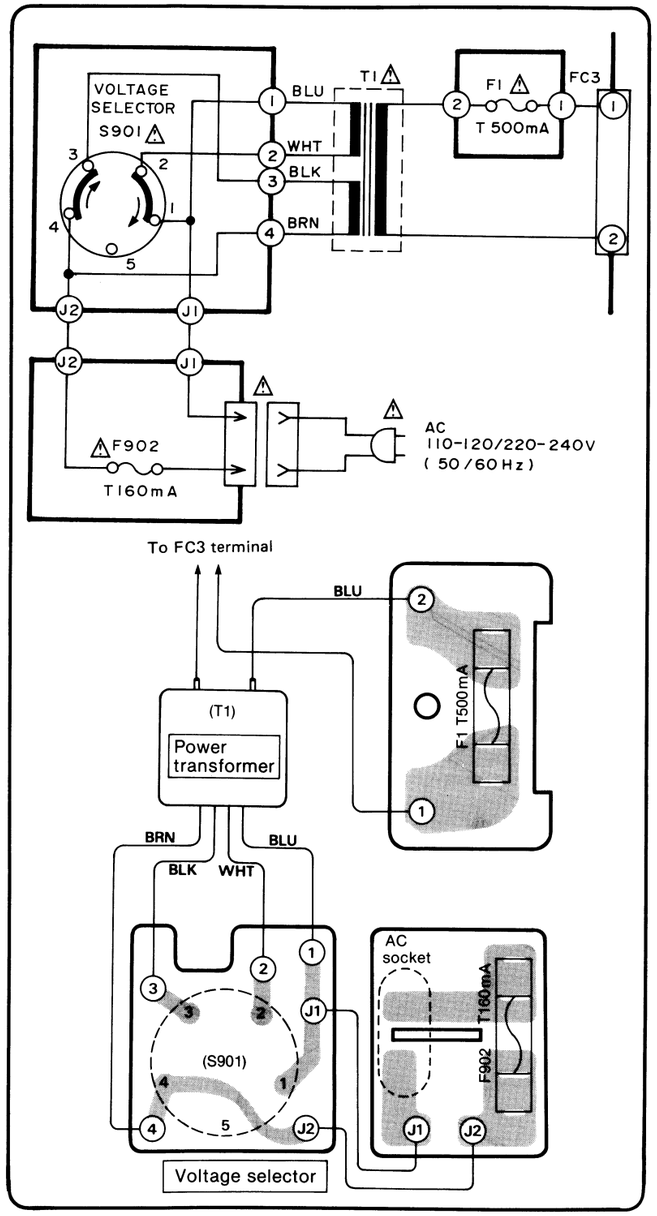
ICI
AN78MI2
REGULATOR

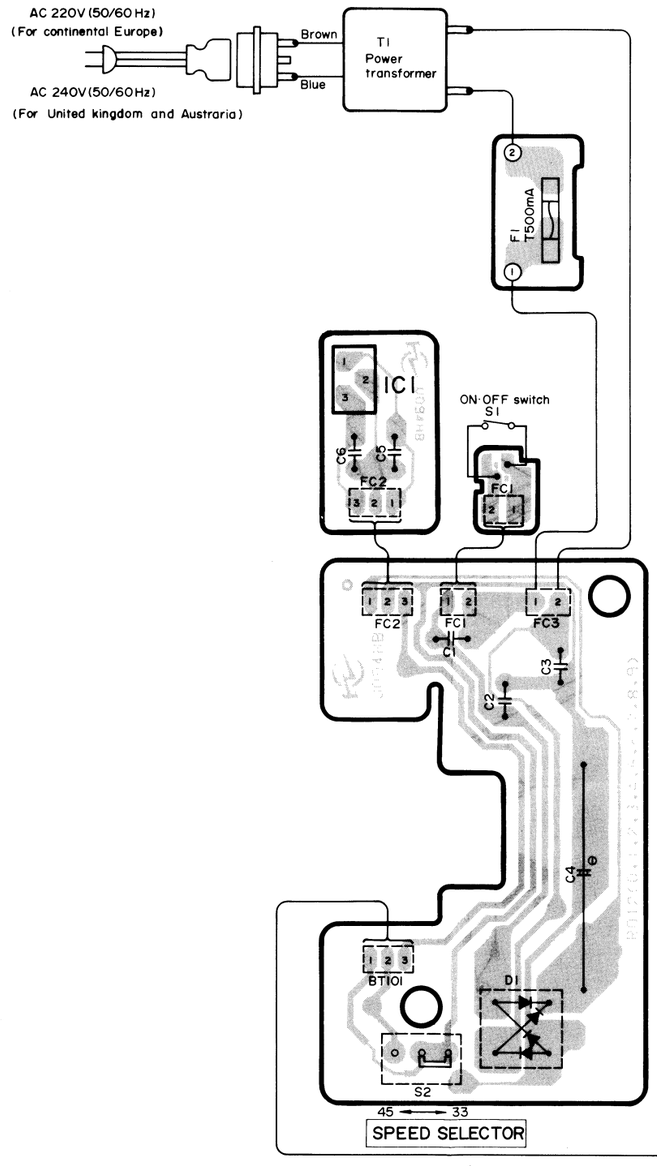


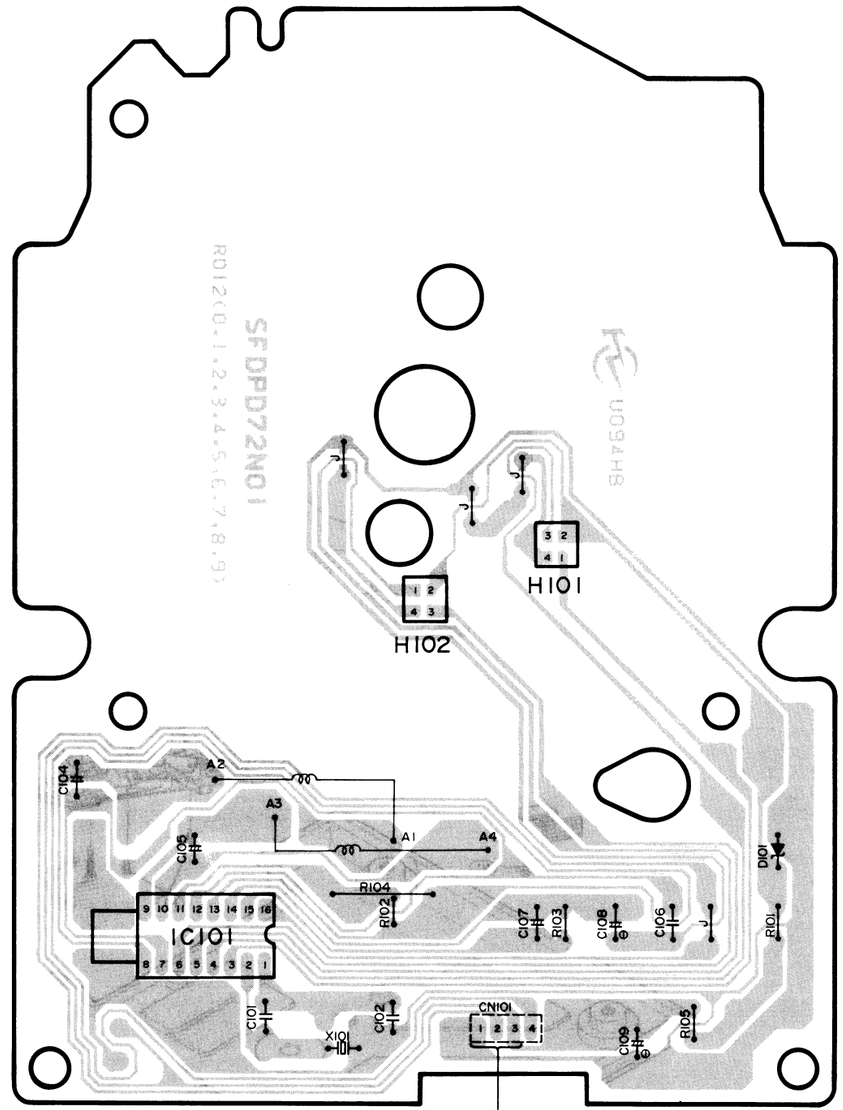


■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

- **Power source circuit**
  For [XA] and [XM] areas





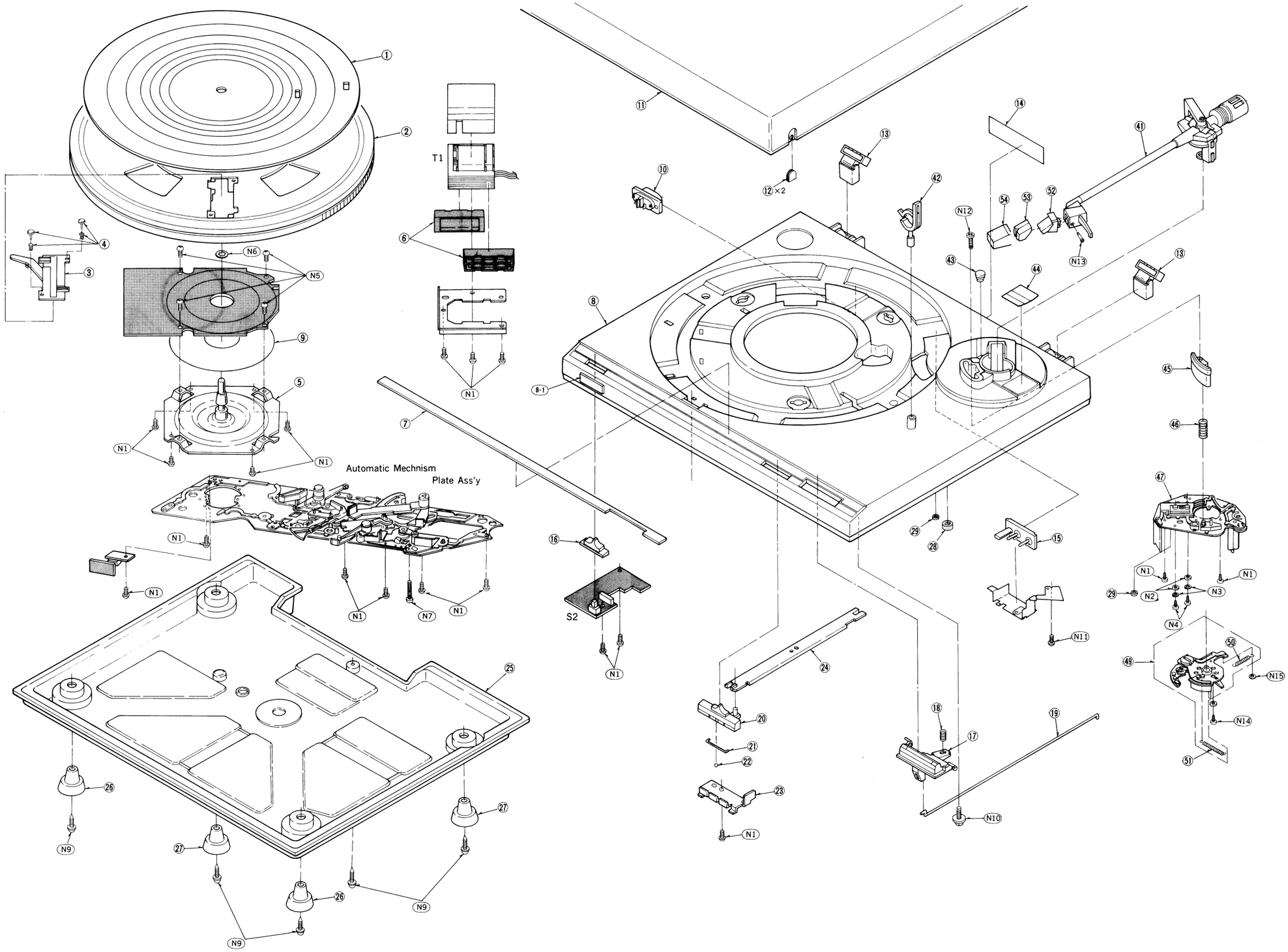


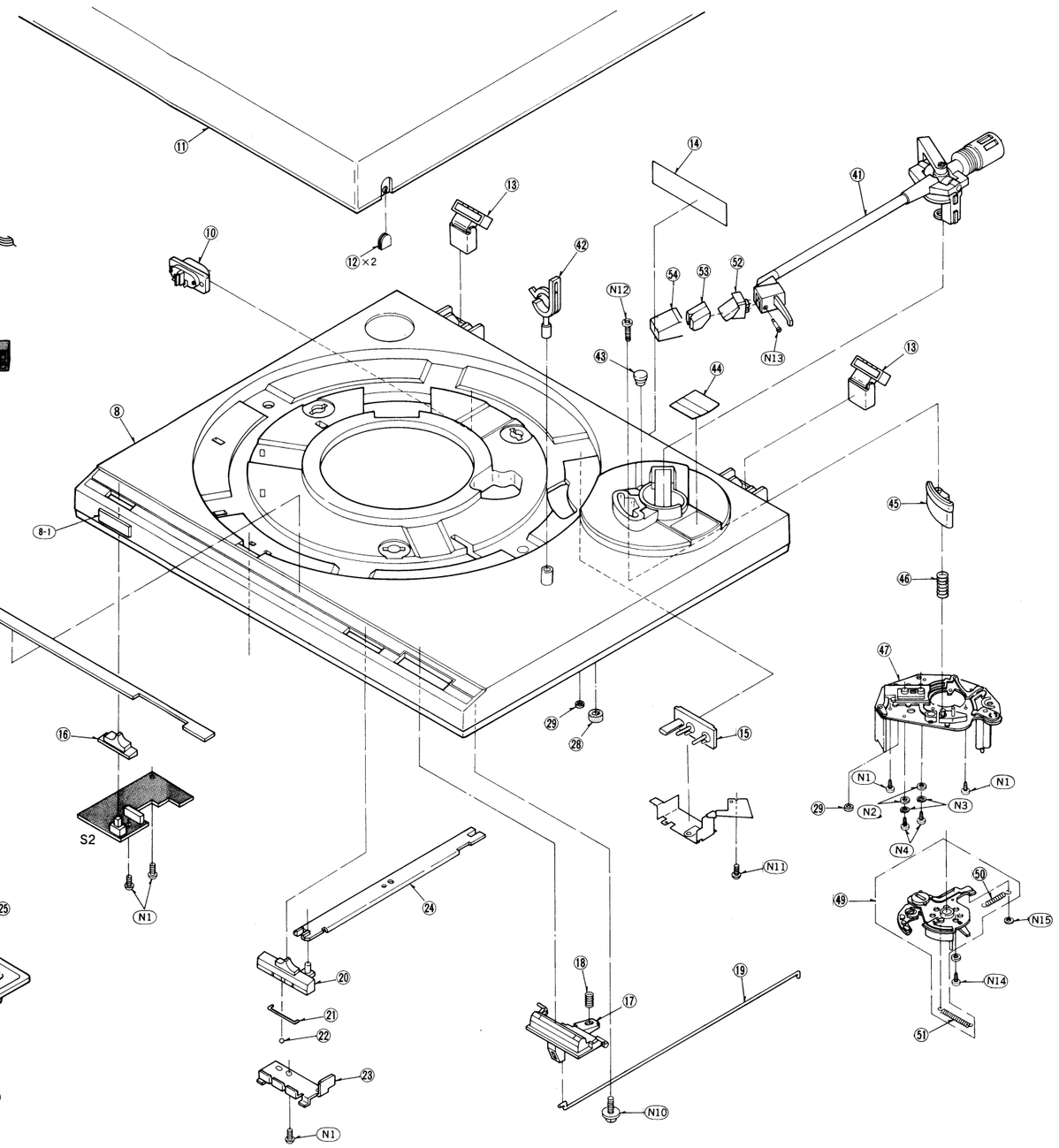
SL-D310 SL-D310

■ EXPLODED VIEWS

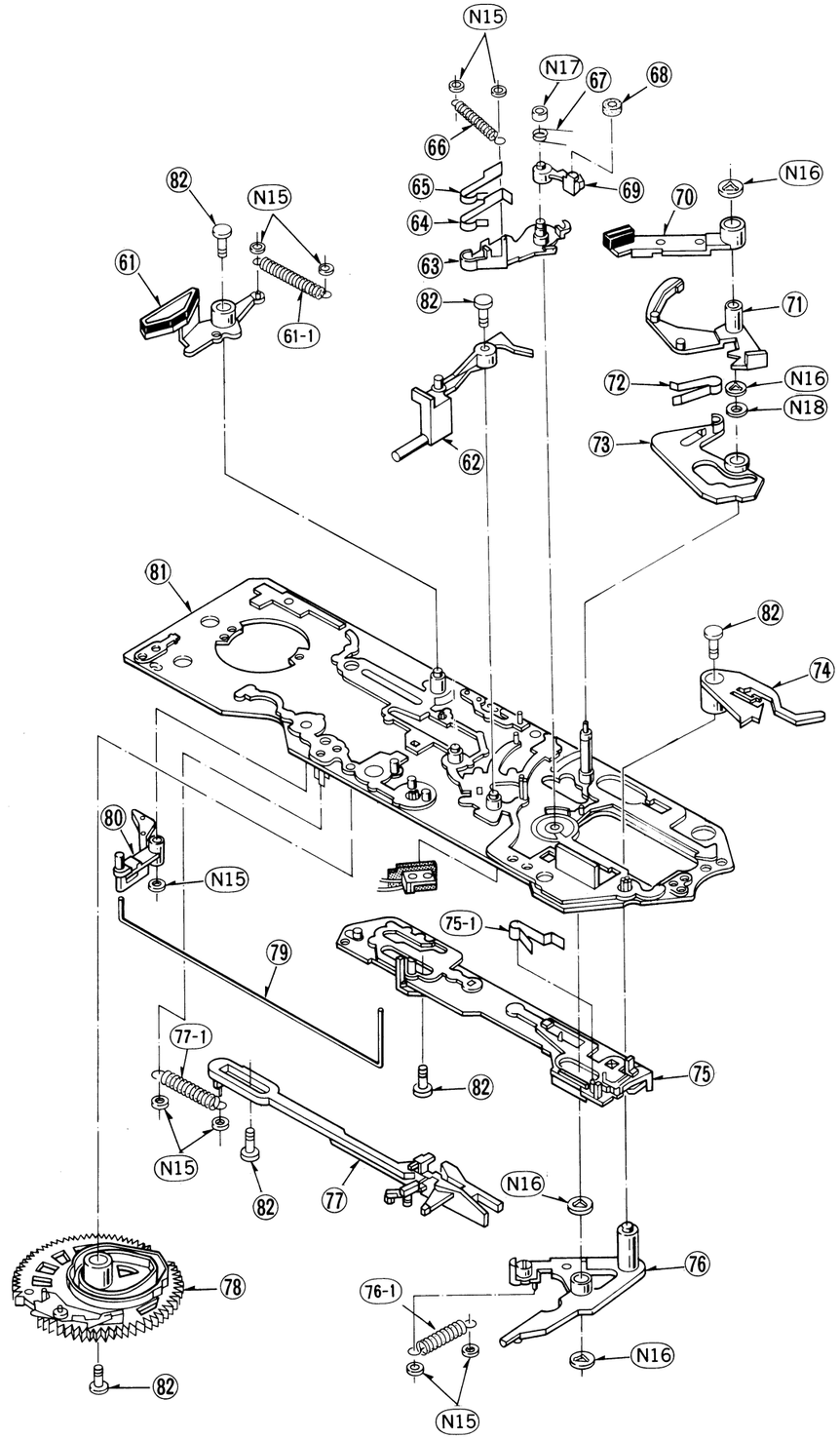
- **Cabinet and Chassis Parts**

- **Automatic mech**





- **Automatic mechanism plate parts**



■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the column of description stand for the quantity per set.
6. Ⓚ-marked parts are used for black type only, while ○-marked parts are for silver type only.
7. Part other than Ⓚ -and ○-marked are used for both black and silver types.

Black type model No. : SL-D310 (K)

Areas

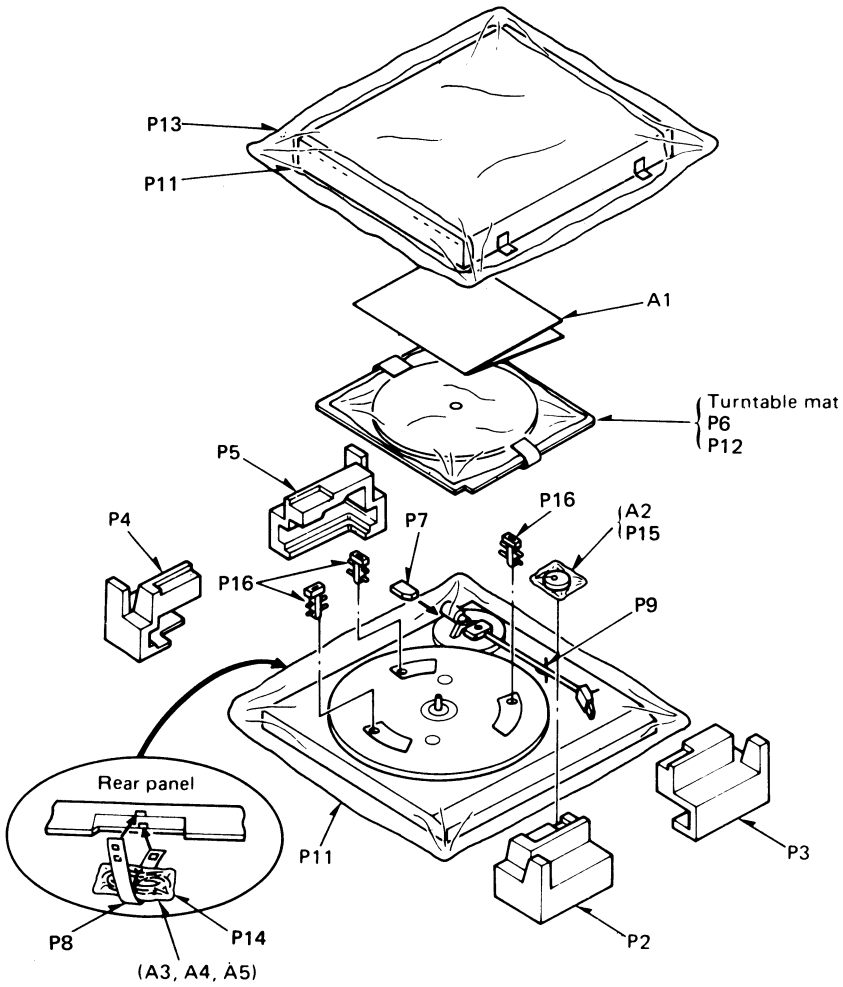
* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [EC] is available in Czechoslovakia.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XM] is available in Central South America.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN78M12	Regulafor
IC101	AN6639	Turntable Drive
DIODES		
D1 ⚠	SVDS1WB40	Rectifier
D101	MA1075-FV	7.5V Zener
HALL ELEMENTS		
H101,102	OH-002	Turntable Position Detector
OSCILLATOR		
X101	SVFCSB525P	524.16kHz Ceramic Oscillator
SWITCHES		
S1 ⚠	SFDSD72R01	Power
S2	SFDSHSW0739	Speed Selector
S901 [XA,XM] only ⚠	SFDSHXW225-2	Voltage Selector
FUSES		
F1 ⚠	XBA2C05TR0	250V,T500mA
F902 [XA,XM] only ⚠	XBA2C016TR0	250V,T160mA
POWER TRANSFORMER		
T1 [EK,XL] ⚠	SLT48DTE13E	Power Source
T1 [XA,XM] ⚠	SLT57DT7E	Power Source
T1 [other areas] ⚠	SLT48DT10E	Power Source
RESISTORS		
R101	ERD10TLJ101U	Chip Carbon,1/8W 100Ω,±5%
R102	ERX1ANJ1R8	Metal Film,1W, 1.8Ω,±5%
R103	ERD10TLJ822U	Chip Carbon,1/8W 8.2kΩ,±5%
R104	ERD10TLJ150U	Chip Carbon,1/8W 15Ω,±5%
R105	ERD10TLJ101U	Chip Carbon,1/8W 100Ω,±5%
CAPACITORS		
C1~3 ⚠	ECQM1223KZ	Polyester,100V, 0.022μF,±10%
C4 Ⓢ	ECEB1VU102	Electrolytic,35V, 1000μF
C5,6	ECFR1H104ZF	Ceramic,50V, 0.1μF,$^{+80}_{-20}$%
C101	ECUV1H332JUU	Chip Ceramic, 50V,0.0033μF,±5%
C102	ECUV1H181JCM	Chip Ceramic, 50V,180pF,±5%
C104 ⚠	ECEA1AN470SB	Non Polar Electrolytic,10V,47μF
C105 ⚠	ECEA1AN330S	Non Polar Electrolytic,10V,33μF
C106	ECFR1H104ZF	Ceramic,50V, 0.1μF,$^{+80}_{-20}$%
C107 ⚠Ⓢ	ECEA1CN100S	Non Polar Electrolytic,16V,10μF
C108	ECEA1AM330T	Electrolytic,10V, 33μF
C109 Ⓢ	ECEA1CU330	Electrolytic,16V, 33μF

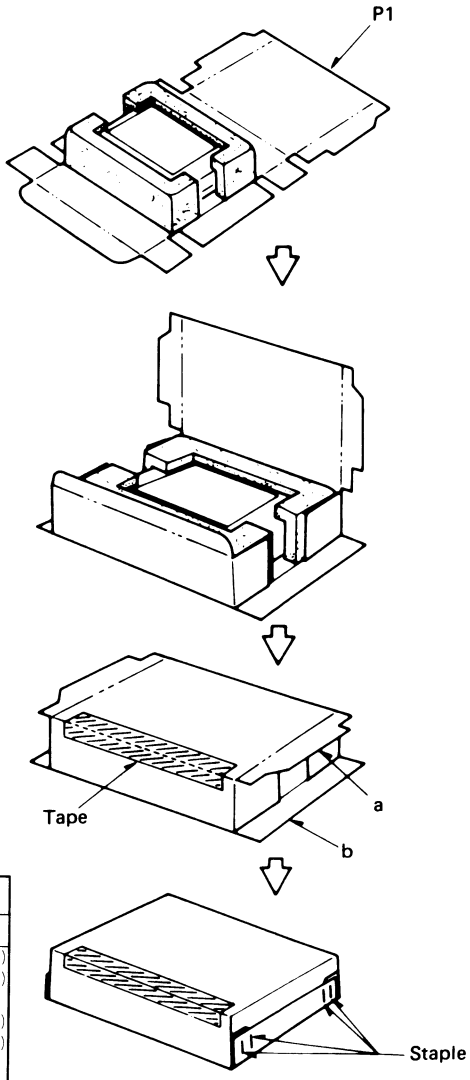
Ref. No.	Part No.	Description	
CABINET and CHASSIS PARTS			
1	SFTGDP3N01	Turntable Mat	(1)
2	SFTEQ71R01E	Turntable Platter Ass'y	(1)
3	SFUMQ34N01E	Record Size Detector	(1)
4	SFUZD33-01E	Latch, Record Size Detector	(2)
5	SFMZQ63M53A	Stator Frame Ass'y	(1)
6 [XA,XM]	SFGCC05X01	Cushion Rubber, Power Transformer	(2)
6 [Other Areas]	SFGCC05N02	Cushion Rubber, Power Transformer	(2)
7	SFKKD71R01	Ornament Plate	(1)
8 ○	SFACD72R01R	Cabinet (Silver)	(1)
8 Ⓚ	SFACD72R21R	Cabinet (Black)	(1)
8-1	SFKKD72R02	Badge	(1)
9	SFMGQ34N01	Cover, Stator Coil	(1)
10 [XL] ⚠	SFDJHSC0491	Socket, AC Cord	(1)
10 [XA,XM] ⚠	SFDJHSC04912	Socket, AC Cord	(1)
10 [Other Areas] ⚠	SFDJHSC0498	Socket, AC Cord	(1)
11	SFADZ15R01E	Dust Cover	(1)
12	SFGZD04N01	Cushion Rubber, Dust Cover	(2)
13	SFATZ15R01	Hinge	(2)
14 [E,EC]	SFNND71S01	Name Plate	(1)
14 [EK,XL]	SFNND71G01	Name Plate	(1)
14 [XA,XM]	SFNND71X01	Name Plate	(1)
14 [Other Areas]	SFNND71R01	Name Plate	(1)
15	SFDJZ15R01	Jack, Phono Output	(1)
16	SFKTZ15R02	Knob, Speed Selector	(1)
17	SFKTZ15R01	Button, Start/Stop	(1)
18	SFQHZ15R01	Spring, Start/Stop Button	(1)
19	SFUZB63M01	Rod, Start/Stop	(1)
20	SFKTZ15R04	Knob, Cueing	(1)
21	SFQPZ15R02	Spring, Cueing Knob	(1)
22	SFYB-5-32	Ball	(1)
23	SFUPZ15R05	Holder, Cueing Knob	(1)
24	SFUPZ15R03	Lever, Cueing	(1)
25	SFAUZ15R01	Bottom Board	(1)
26	SFGAQ63M01	Insulator	(2)
27	SFGAZ15R01	Insulator	(2)
28	SFGZB63M01	Holder, Lead Wires	(1)
29	SFGZZ15R02	Holder, Lead Wires	(2)
TONEARM PARTS			
41 ○	SFPAMQ3207A	Tonearm Ass'y (Silver)	(1)
41 Ⓚ	SFPAMQ3208A	Tonearm Ass'y (Black)	(1)
42	SFKUB63M01E	Tonearm Rest Ass'y	(1)
43 ○	SFGK170-01	Rubber Cap (Silver)	(1)
43 Ⓚ	SFGK171F01	Rubber Cap (Black)	(1)
44	SFKKZ15R01	Plate, Canceller	(1)

Ref. No.	Part No.	Description	
TONEARM PARTS			
45	SFUMZ15R58	Tonearm Lift	(1)
46	SFQAZ15R52	Spring, Tonearm Lift	(1)
47	SFUPB63M51A	Base, Tonearm	(1)
49	SFUPB63M52A	P.U. Fixing Plate	(1)
50	SFQHB63M56	Spring	(1)
51	SFQHZ15R55	Spring	(1)
52	EPC-P27S	★Cartridge	(1)
53	EPS-27CS	★Stylus	(1)
54	SFCNC03301	Cover, Stylus	(1)
AUTOMATIC MECHANISM PLATE PARTS			
61	SFUMQ63M51E	Record Size Detector Ass'y	(1)
61-1	SFQHB63M53	Spring, Record Size Detector	(1)
62	SFUMB63M59	Lever, Cueing	(1)
63	SFUMB63M60	Cam, Cueing	(1)
64	SFQPB63M54	Spring, Cueing Cam	(1)
65	SFQPB63M52	Spring, Cueing Cam	(1)
66	SFQHB63M55	Spring, Cueing	(1)
67	SFQSB63M52	Spring, Brake Lever	(1)
68	SFUZB63M52	Felt, Brake Lever	(1)
69	SFUMB63M61	Lever, Brake	(1)
70	SFUMB63M64E	Lever Ass'y, Index	(1)
71	SFUMB63M63	Plate, Index	(1)
72	SFQPB63M53	Spring, Index Sub Plate	(1)
73	SFUMB63M62	Sub Plate, Index	(1)
74	SFUMB63M65	Guide Plate, Tonearm	(1)
75	SFUBB73R51E	Drive Plate Ass'y	(1)
75-1	SFQPB63M51	Spring, Drive Plate	(1)
76	SFUMB63M55E	Lever Ass'y, Switch	(1)
76-1	SFQHB63M52	Spring, Switch Lever	(1)
77	SFUMB63M53E	Lever Ass'y, Cancel	(1)
78	SFUGB63M51E	Main Gear Ass'y, Drive	(1)
79	SFQSB63M51	Rod, Drive	(1)
80	SFUMB63M54	Lever, Drive	(1)
81	SFUKB63M51E	Base Ass'y, Automatic Mechanism	(1)
82	SFUMZ15R56	Pin	(6)
SCREWS and WASHERS			
N1 Ⓢ	XTV3+8BFN	Screw	(11)
N2 Ⓢ	XWG3	Washer	(2)
N3 Ⓢ	XWA3B	Washer	(2)
N4 Ⓢ	XSN3+12S	Screw	(2)
N5 Ⓢ	XTV3+6BFN	Screw	(4)
N6	SFXWC06N02	Washer	(1)
N7	XTN3+30J	Screw	(1)
N8 Ⓢ	XTV3+10BFN	Screw	(5)
N9	XTW3+14QFYR	Screw	(5)
N10	SFXGB33N01	Screw	(1)
N11	XYE3+EJ8	Screw	(1)
N12	XTS3+16FFZ	Screw	(1)
N13	SFPEV0Q601	Screw	(1)
N14	SFXGQ34N02	Screw	(1)
N15	SFXWZ15R51	Washer	(10)
N16	SFXWB63M52	Washer	(4)
N17	SFUMZ15R61	Washer	(1)
N18	SFXWB63M53	Washer	(1)

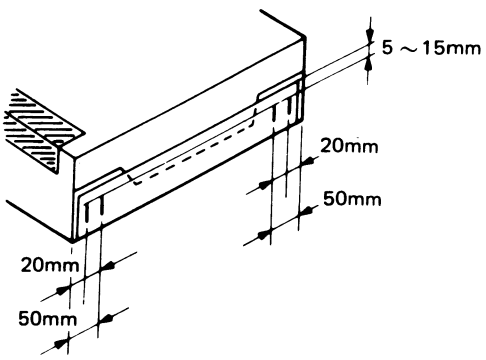
■ PACKINGS



1. Plase the unit (with cushions attached) as illustrated.
2. Fold the flaps according to the line marks.
3. Seal the top with adhesive tape.
   * Use gum tape or adhesive cloth tape of 50mm wide at least
4. For the edges, first fold the flap "a" and then flap "b", and staple. Remember to staple only flap "b". (Use 15 or 16mm staple)



* Stapling positions are shown below.



Ref. No.	Part No.	Description	
ACCESSORIES			
A1 [EK]	SFNUD71G01	Instruction Book	(1)
A1 [EG]	SFNUD71R01	Instruction Book	(1)
A1 [EF]	SFNUD71F01	Instruction Book	(1)
A1 [Ei]	SFNUD71I01	Instruction Book	(1)
A1 [XL,XA XM]	SFNUD71X01	Instruction Book	(1)
A1 [Other Areas]	SFNUD71S01	Instruction Book	(1)
A2	SFWE212-01	Adaptor, 45r.p.m	(1)
A3	SFDHC05N01	Phono Output Cord	(1)
A4 [XL]	SFDLC05N01	Ground Wire	(1)
A4 [Other Areas]	SFDLZ15R01	Ground Wire	(1)
A5 [EK] ⚠	SFDAC05G02	AC Cord	(1)
A5 [XL] ⚠	SFDAC05L01	AC Cord	(1)
A5 [XA,XM] ⚠	SFDAC05X02	AC Cord	(1)
A5 [Other Areas] ⚠	SFDAC05E02	AC Cord	(1)
A6 [XA,XM] ⚠ Only	SFDKI19118	2pin Plug	(1)

Ref. No.	Part No.	Description	
PACKING PARTS			
P1 [EF] ○	SFHPD71F01	Carton Box (Silver)	(1)
P1 [Other ○ Areas]	SFHPD71R01	Corton Box (Silver)	(1)
P1 [EF] Ⓚ	SFHPD71F21	Carton Box (Black)	(1)
P1 [Other Ⓚ Areas]	SFHPD71R21	Carton Box (Black)	(1)
P2	SFHHQ63M01	Pad, Front (Left)	(1)
P3	SFHHQ63M02	Pad, Front (Right)	(1)
P4	SFHHQ63M03	Pad, Rear (Left)	(1)
P5	SFHHQ63M04	Pad, Rear (Right)	(1)
P6	SFHDZ15R01	Pad, Turntable Mat	(1)
P7	SFHZQ63M01	Pad, Tonearm	(1)
P8	SFHZZ15R02	Clamper, Cord	(1)
P9	SFHZZ15R03	Clamper, Tonearm	(1)
P10	SFHZQ63M01	Prop, Dust Cover	(1)
P11	SFHZD03M01	Sheet, Dust Cover	(1)
P12	SFYF30B35	Polyethylene Bag, Turntable Mat	(1)
P13	SFYH60X60	Polyethylene Bag, Unit & Dust Cover	(2)
P14	SFYH18X17	Polyethylene Bag, Cords	(1)
P15	SPB1083	Polyethylene Bag, 45 Adaptor	(1)
P16	SFHKQ63M01	Clamper, Turntable	(1)

Printed in Japan
84058000 Ⓗ TK